## General Index

Abele, L. G., 263-71 Acanthohaustorius intermedius, 178, 180-2, 184, 187, 188 millsi, 178, 180-3, 187-8 Acanthurus sp. 196 Acartia clausi, 31-3, 36-7 tonsa, 31-3, 36-7, 157-9, 330 Acclimation temperature, 2, 9 Acer saccharum, 327 Acetone, contamination by, 227 Acteocina canaliculata, 301, 305 Acteon pelecais, 301 punctostriatus, 300-1 Agolis piliata, 314 Agordhiella tenera, 128, 131–2, 136 Agathis acrobasidis, 224 Albumin, 66, 68 phenotypes, 67 polymorphism, 66-7 Alderia harvardiensis, 300, 307 modesta, 300-1, 306-7 uda, 300, 307 Alewife, 62 Algae, 245-6 Algal blooms, 279 Alosa aestivalis, 62 pseudoharengus, 62 sapidissima, 62, 116 Alteutha depressa, 32-4 Amende, L. M., & C. P. Mangum, 318-20 American eel, 113 shad, 62, 116 eggs, 117-9 larvae, 119 spawning, 118 Amia calva, 323-4 Ampelisca vadorum, 177-8, 180, 182-4, 187–8 verrilli, 177–8, 180, 182–4, 187–9 Amphipod, fish predators on, 186 vertical migration, 186, 190 Amphipods, 175–7, 180, 182–9, 196 Ampithoe longimana, 177, 178, 180, 182, 184, 186, 188, 189 Anchoa mitchilli, 62 Anomia simplex, 221 Anonchus sp. 320 Apanteles sp. 223-4 Aphedoderus sayanus, 231 Argissa sp. 178, 180 Argonauta argo 195 Argopecten irradians concentricus, 218 Arsenic, 246 Artemia, 221 Ascophyllum nodosum, 127, 130-2, 135 Asellus sp. 320 Astyris sp. 195 Atlantic croaker, 87-96, 98-9 predation on by striped bass, 93-4 relation to temperature, 92 herring, 28 menhaden, 62-3, 161, 163-74, 215-

7, 321-2

behavior, 161 eggs, 161, 172 juveniles, 164-6, 170-2, 174, 189 larvae, 172 population structure, 166, 169 recruitment, 168-9 spawning habits, 171 vertebral count, 171-3 salmon, 24 Atrometus praediscae, 223-4 Attheyella illinoisensis, 320 Attylus minikoi, 178, 181–3, 188–90 Aurelia aurita, 43, 330 Auxis thazard, 194, 196–7

Balanus sp. 32-3, 36 improvisus, 320 Bangia fuscopurpurea, 128, 131-2, 135 Barans, C. A., 59-61 Barnacle nauplii, 33 Barracuda, 326 Batea catharinensis, 177-8, 180-5, 188-9 Bathyporeia pelagica, 186 pilosa, 186-7 sp. 178, 182-3, 186 Batts, B. S. 193-200, 237-44 Bay anchovy, 62 scallop, 218-9 Beroe ovata, 330 Beryllium, 245, 247–53 toxicity, 245 uptake, 250 Bimeria franciscana, 229 Bivalve respiration, 1 Black cherry, 148 drum, 87 Blarina brevicauda, 149, 327 Blidingia minima, 127, 129, 130, 134 Bloodworms, 111 Blue crab, 318-20, 332-3 blood osmotic properties, 318-9 Blueback herring, 62 Bluefish, 321 BOD, 25-6 Boesch, D. F., 206-11 Boon, D. D., 334-5 Boring sponge, 232 Bortone, S. A., 231-2 Bosmina sp., 158-9 Bowfin, 323-4 Bowmaniella, 254 dissimilis, 254-6 johnsoni, 256 Brachyscelus crusculum, 195 Bracon gemmaecola, 224 Brevoortia tyrannus, 62, 321 Broome, S. W., and É. D. Seneca, 212-5 Bryopsis hypnoides, 127, 129-30, 133 plumosa, 127, 129-30, 133 Burbanck, W. D., and B. J. Kelly,

Butterfish, 196 Bynum, K. H., and A. B. Williams, 175-92

C

Cadmium, 246 Caenacis sp. 223-4 Calanus finmarchicus, 32-4 Calder, D. R., 40-4 Callinectes sapidus, 32, 34, 320 Calliopea fuscata, 300, 305, 314 Callithamnion baileyi, 128, 131, 132, 136 Callophyllis lacineata, 120 Calothrix crustacea, 126, 128, 133 Campoplex sp., 224-5 Cancer irroratus, 32, 34 Canthocamptus, 320 Caprella equilibra, 177, 179, 181, 183-5, 189 penantis, 177, 179, 181–2, 184–5, 187, 189 Caranx sp., 196-7 Cardium edule, 18 Cargoa cupella, 312 Carp, 113 Carter, H. H., E. W. Schiemer, J. R. Schubel, and R. C. Whaley, 80-86 Catfish, 111 Cavolina sp. 195, 197 longirostris, 195, 197 Centropages hamatus, 32-4 typicus, 32, 37 Ceramium, 135 diaphanum, 128, 131–2, 136 fastigiatum, 128, 131–2, 136 rubrum, 127, 128, 131–2, 135 strictum, 128, 131–2, 136 Cerapus tubularis, 178, 180, 182–3 Cerataspis sp., 195, 197 Cerataulina, 36 Cerathoa sp., 195 Ceriodaphnia sp., 320 Chaetodipterus faber 196 Chaetomorpha aerea, 127, 129-30, 134 Chaetopterus variopedatus, 221 Chapman, J. A., and D. M. Harman, 149 and J. L. Paradiso, 148 Chasmodes bosquianus, 23-7 Chlorella vannielii, 246, 248-52 Chlorination, 229-30 Chlorophycophyta and Xanthophycophyta key to, 133-4 Chlorophyll *a*, 279, 283–90, 292–7, 321, 330 Chondria tenussima, 128, 131-2, 136 Chondrus crispus, 128, 131-2, 136 Chromium, 246 Chrysaora hysoscella, 41, 330 melanaster, 41 quinquecirrha, 32, 34, 37, 40–2, 145, 176, 300, 330

201-5

Cladocerans, 36 Cladophora albida, 127, 129–30, 134 crystallina, 127, 129–30, 134 expansa, 127, 129–30, 134 flexuosa, 120, 127, 129–30, 134 marrisiae, 120 Clam, 3-4, 19 Clinostomus funduloides, 63 Cliona caribboea, 233 celata, 233 truitti, 233 vastifica, 233 vermifera, 232 Coot clam, 1, 4 Copepod, 29-30, 33-4, 36-7, 156-7, 159 nauplii, 30, 33 Copidosoma deceptor, 223-4 Corambella baratariae, 313-4 depressa, 313-4 Cornus florida, 327 Corophium acherusicum, 178, 180 lacustre, 178, 180, 183–6, 188–9 Cory, R. L., K. Murakami, and N. Yotsukura, 101–9 Corypheana hippurus, 196 Corythroichthys sp., 197 Coscinodiscus, 36 Coscinosira sp., 291 Crab, blue, 318-20, 332-3 Crab infected scallops, 219 Crabs, 196, 218, 221-2 Crangon septemspinosa, 32-4 Crassostrea virginica, 218, 221, 232, 334 Cratena kaoruae, 314-5 Crataegus sp., 327 Cratena pilata, 300-1, 314-5 Crucian carp, 139 Crustaceans, 196-9 Ctenophores, 37, 328-31 Cyanea capillata, 330 Cyanide, 246 Cyanophycophyta, key to, 133 Cyathura polita, 201, 203-4 Cyclops sp., 320 Cylindrotheca closterium, 291 Cymadusa compta, 177-8, 180, 182-5, 188-9 Cynoscion regalis, 87 Cypselurus heterurus, 194-5, 197

## D

Dactylometra, 43

pacifica, 41
quinquecirrha, 47
Dactylopterus volitans, 196
Daphnia ambigua, 320
pulex, 320
Davis, J., and R. A. St. Pierre, 272–81
Davis, R. M., 63–5
DDT, 97, 99
Deer mouse, 150
Demissus plicatulus, 14
Detracia floridana, 150, 152
Diatoms, 110
Diplogaster sp., 320
Dissolved oxygen, 23–7, 116, 118, 124, 283, 289–90, 321–2
Distichlis spicata, 70, 151–2
Doridella burchi, 313, 315

carambola, 313-5
obscura, 301, 312, 314
Doriopsilla pharpa, 301, 314-5
Doris verrucosa, 301, 312-3
Dorosoma cepedianum, 113
Dressel, D. M., D. R. Heinle, and
M. C. Grote, 156-9
Dugesia tigrina, 320
Dupuy, J. L., and S. Rivkin, 45-52

# E Ectocarpus confervoides, 127, 130-1,

fasciculatus, 127, 130-1, 135 tomentosus, 127, 130-1, 135 Elachistea fucicola, 127, 130-1, 135 Elasmopus levis, 177-8, 180, 182-5, 188-9 Electrophoresis, 67 Elysia catula, 310 catulus, 301, 310-12 chlorotica, 301, 308-10, 312 clena, 312 duis, 310 ornata, 310 viridis, 310 Elysiella catula, 310 catulus, 310 Embletonia fuscata, 300, 314 pallida, 314 patitad., 514
Enteromorpha sp., 123
intestinalis, 127, 129–30, 134
linza, 123, 127, 129–30, 134
marginata, 127, 129–30, 134
prolifera, 127, 129–30, 134
Entophysalis deusta, 126, 128, 133
Ercolania fuscata, 300–1, 305–6
vanellus, 301–306 vanellus, 301, 306 Erichthonius brasiliensis, 178, 180, 185 minax, 178, 180, 182 Etrumeus sadina, 194-7 Euchlanis sp., 296 Euglena sp., 291 Eupelmus cyaniceps, 223-4 European pine shoot moth, 223 Eurytemora affinis, 31, 33, 37, 157-9 americana, 32-3, 37 hedmani, 32-4, 37-8 Eurytoma pini, 223-6 Evadne nordmanni, 32-4, 38 Exeristes comstockii, 223-5

## F.

Fabia subquadrata, 218
Facelina pilata, 314
Facelina pilata, 314
Fimbristylis castanea, 152
Fish, 161–3, 166, 168, 170, 174, 176, 189, 193–4, 196, 198–9, 237, 239–40, 272–3, 279
age, 237, 240–1
behavior, 161
egg, 25–6, 117–9, 161, 172
female/male ratio, 275
growth, 61, 237, 239, 276–80
juveniles, 164–6, 170–2, 174, 189
larvae, 25–6, 119, 145, 172, 175, 187, 254
length, 61, 193, 240, 274

length-weight relationship, 237-8, 242, 275 meal, 161 mortality, 26, 277-80 population structure, 166, 169 predation, 93-4, 186 recruitment, 168-9 relation to temperature, 92 sex, 193 spawning, 118, 171 stomach contents, 193 vertebral counts, 171-3 weight, 193 year class strength, 275 Fisher, R. D., and C. D. Wilder, Jr., 326-7 Fishing intensity, 217 Flemer, D. A., D. H. Hamilton, and C. W. Keefe, 226-9 Flounder, post larvae, 145, 254 Flying fish, 194 Frigate mackeral, 194 Frisbie, C. M., and C. J. Moore, 110-5 Frog, 139 Fucus sp., 129 edentatus, 127, 130-1, 135 spiralis, 127, 130-1, 135 vesiculosus, 123, 126–7, 130–2, 135 vesiculosus var. laterifructus, 127, 130, 132, 135 var. sphaerocarpus, 127, 130, 132, 135 var. spiralis, 127, 130, 132, 135

## 0

Gall, A. L., S. W. Nixon, and C. A. Oviatt, 321-3 Gamma irradation, 201-2 Gammarus sp., 178, 180 fasciatus, 32-4, 190 locusta, 186 lucustris, 320 minus, 178, 184 mucronatus, 178, 180-9 oceanicus, 186 palustris, 178, 180, 182-4, 186-8 inus, 178, 180, 182, 184-6, 188-90 pulex, 187 tigrinus, zaddachi, 186 Gastrosaccus, 254 Gaultheria procumbens, 327 Gizzard shad, 113 Glaucomys volans, 327 Glossiphonia complanata, 320 Glycymeris americana, 232 Gobiesox strumosus, 23, 25, 27-8 Gobiosoma bosci, 23, 25-6, 28 Golden mouse, 326 Goniozus sp., 224 Goniozus sp., 224 Gonyaulax sp., 224 Gonyaulax sp., 288, 291 Gracilaria folitiera, 128, 131, 132, 136 verrucosa, 123, 128, 131–2, 136 Graffe, A. J., 153 Grass, 212 Grote, M. C., D. M. Dressel, and D. R. Heinle, 156-9 Gymnodinium nelsonii, 290-1, 293 splendens, 288, 290-1

Habrocytus thyridopterigis, 223-5 Haltichella rhyacioniae, 224–5 Hamilton, D. H., D. A. Flemer, and C. W. Keefe, 226–9 Haminoea antillarum, 301, 305 elegans, 301–2, 305 solitaria, 301–5 succinae, 301–5 Hapleginella conicola, 224 Harman, D. M., 223–6 and J. A. Chapman, 149 Haustorius arenarius, 186 canadensis, 186
Heinle, D. R., D. M. Dressel, and M. C. Grote, 156-9 Hermaea coirala, 308 cruciata, 301, 307-8 dendritica, 308 paucicirra, 308 Herman, S. S., and L. E. Sage, 29–39 Herring, 161 Heteromysis formosa, 254, 261 Hettler, W. F., Jr. 326 Hippocampus sp., 139, 195 Hippocampus sp., 139 Hoese, H. D., 232–33 Hogchoker, 324–5 Holocentrus sp., 196 Hyalella azteca, 179, 184, 186, 320 Hydra, 320 Hydroids, 229-30 Hypnea musciformis, 128, 131-2, 136 Hyssopus rhyacioniae, 224 thymus, 223-4

Ictalurus catus, 113 Idunella sp., 179-80, 183 In vivo fluorescence 283-4, 288-9, Isopod, 201 Istiophorus albicans, 196-7 Iva frutescens, 152

Japanese larch, 149 *Jassa falcata*, 179–80, 183, 185, 188–9 Jellyfish, 40, 43, 328–31 ephyrae, 40-1 medusae, 40-1 nematocyst, 43 Jingle shell, 221 Joseph, E. B., 87-100 and V. P. Saksena, 23-8 Juncus roemerianus, 69-73, 75-8 Juniperus virginiana, 327

Kalmia sp., 327 Karlander, E. P., and R. W. Krauss, 245-53 Katsuwonus pelamis, 237 Keefe, C. W., D. A. Flemer, and D. H. Hamilton, 226-9 Kellicottia bostoniensis, 320 Kelly, B. J., Jr., and W. D. Burbanck, 201 - 5Kennedy, V. S., and J. A. Mihursky, 1-22 Kerwin, J. A., 150-2 Key to the Chlorophycophyta and Xanthophycophyta, 133-4 Cyanophycophyta, 133 Phaeophycophyta, 134-5 Rhodophycophyta, 135-6 Killifish, 139
Koo, T. S. Y., G. E. Krantz, and R. P. Morgan, II, 66–8
Krantz, G. E., T. S. Y. Koo, and R. P. Morgan, II, 66–8
Kraus, R. W., and E. P. Karlander, 245-53 Kruczynski, W. L., 218-20 Kuragea, 43

Labidocera aestiva, 32-4

Lansford, L. M., K. T. Marvin, and R. S. Wheeler, 327-8 Learson, R. J., and B. L. Tinker, 331 - 3Laonereis culveri, 320 Larch sawfly, 149 Larix leptolepis, 150 Lead, 246 Leander tenuicornis, 195, 197 Leathesia difformis, 127, 130-1, 134 Leiostomus xanthurus, 87 Lembos sp., 178, 180, 183 Leucothoe spinicarpa, 179-81 Libinia sp., 314 Lilaeopsis chinensis, 152 Lirodendron tulipifera, 327 Listriella sp., 179-80 Lithium, 245-6, 248-9, 251 Littoral drift, 80, 82 Littorina littoralis, 150, 1 Livoneca ovalis, 195, 197 Loblolly pine, 224–26 Locust, 148 Loftus, M. E ., H. H. Seliger, and D. V. Subba Rao, 282-99 Loligo pealei, 194-Lonicera japonica, 327 Lymnaea stagnicola, 320 Lymgbya aestuarii, 126, 128–9, 133 confervoides, 123, 126, 128–9, 133 semiplena, 126, 128–9, 133 Lysianassa alba, 179–83, 187–8 Lysieriothus layron, 104, 106 Lysierichthus larvae, 194, 196 Lysiosquilla sp., 195

Macoma balthica, 1-4, 6, 10, 11, 14-20 Macroplankton, 175 Maera sp., 178, 180, 182-4 Mangum, C. P., and L. M. Amende, 318-20 Maple, 148 Marcus, E. du B.-R., 300-17 Marcy, B. C., Jr., 116-9 Marine algae, 120, 126 Marvin, K. T., R. S. Wheeler, and L. M. Lansford, 327-8

Masked shrew, 149-50 McLean, R. I., 229–30 Meadow vole, 150 Melampus bidentatus, 150-2 Melita appendiculata, 178, 181, 183, 184, 186-88 nitida, 178, 180, 182-9 Mercenaria mercenaria, 20 Mercury, 246
Meretrix casta, 220 Meroplankton, 175 Merriner, J. V., and W. L. Wilson, 62 Metabolic rate, 1, 6, 12 Metabolism, 4, 7, 12, 18-20 Metamysidopsis mexicana, 254, 257 chthonoplastes, Microcoleus 128-9, 133 Micropogon undulatus, 87 Microtus pennsylvanicus, 150 pinetorum, 327 Mihursky, J. A., and V. S. Kennedy, 1-22 Miller, R. J., and R. B. Williams, 328-31 Minchinia nelsoni, 45 Mnemiopsis, 40 leidyi, 32, 34, 145, 176, 330 Modiolus demmissus, 14 Mollusks, 196-9 Monochrysis sp., 288 Monoculodes edwardsi, 177, 179-89 Moore, C. J., and C. M. Frisbie, 110-5 and C. R. Posey, Sr., 324-5 Morgan, R. P., II, T. S. Y. Koo, and G. E. Krantz, 66-8 Morone americana, 67, 113, 272 saxatilis, 113 Mortality, 2 Mud crabs, 264 Mugil cephalus, 321 Mulinia lateralis, 1-4, 9, 12-4, 16-20 Murakami, K., R. L. Cory, and N. Yotsukura, 101-9 Murdoch, M. B., and R. B. Williams, 69-79 Muscle fiber, 139-43 Mus musculus, 327 Mya arenaria, 1-9, 14-20, 334 Mysidopsis, 254 bigelowi, 256-7 Mysids, 254 Mytilus californianus, 17 edulis, 14, 17-8, 220

## N

Naked goby, 23, 25, 28 Nantucket pine tip moth, 223-4 parasites, 223-4, 226 Napaeozapus insignis, 150, 327 Needlerush, 69 Nemopsis bachei, 32, 34, 330 Neohaustorius biarticulatus, 186 schmitzi, 178, 180-3, 187-8 Neomysis americana, 32-4, 258-61 Neopanope pourtalesii, 264, 266, 270 packardii, 264-6, 269-70 sayi, 265, 268-70 texana, 32, 34, 265-66, 269-70 sayi, 264-64 Nereis sp., 32

New England cottontail, 148 Nicholson, W. R., 161–74, 215–8 Nixon, S. W., A. L. Gall, and C. A, Oviatt, 321–3 Nudibranch, 300

## O

Oak, 148 Obelia sp., 32, 37 Ochrotomys nuttali, 326 Ogyrides, 254 al phaerostris, 145, 147 limicola, 145–7 Oithona brevicornis, 32–4 similis, 32-4, 38 spinirostris, 32-4 Okenia cupella, 301, 312 evelinae, 312 impexa, 312 Opisthobranchs, 300 Orchestia grillus, 179, 181, 183 platensis, 179, 181 Oscillatoria laetevirens, 126, 128-9, 133 princeps, 126, 128-9, 133 Osprey, 233-5 nesting success, 233 Oviatt, C. A., A. L. Gall, and S. W. Nixon, 321-3 Oxygen consumption, 3–5, 14, 17 Oxytoxum sp., 290–1, 296 Oyster, 45–8, 51, 221 crab, 218 eggs, 45 larvae, 45, 51 spawning, 48, 51 spat, cultch-free, 45, 49-50 toadfish, 140, 142-3 muscle fiber, 139, 142-3

## P

Palaemonetes, 254 Pandion haliaetus, 233 Panopeus sayi, 264 texanus, 263-4 Paracalanus crassirostris, 32-3, 38 Paracaprella tenuis, 179, 181, 183, 189 Paradiso, J. L., and J. A. Chapman, 148 Parahaustorius attenuatus, 178, 182 longimerus, 178, 181-3, 186-8 Parametopella cypris, 179-80 Paranais sp., 320 Parolinx typica, 223-4 Paraphoxus epistomus, 179-81, 187, 189 floridanus, 179-81, 183, 187, 189 spinosus, 179-83, 187, 189 Parathemisto gaudichaudii, 195-7 Pea crab, 220 Pearson, J. G., and F. P. Ward, 323-4 Pelagia quinquecirrha, 43 Penaeid shrimp, 175–187 postlarvae, 254 Penilia avirostris, 32-4 Peprilus triacanthus, 196-7 Percursaria percursa, 127, 129-30, Perilampus fulvicornis, 223-4

Index

Peromyscus leucopus, 327 maniculatus, 150 Petalonia fascia, 127, 130-1, 135 Phaeophycophyta, key to, 134-5 Phanerotoma rhyacioniae, 224 Photoperiod, 2 Phronima sedentaria, 195 Phrosina semilunata, 195 Phyllobaenus lecontei, 224-25 Phyllophora membranifolia, 128, 131-32, 136 Phytoplankton, 220, 282, 284, 289, 291, 293–94, 297–98, 329–31 Physa sayi, 320 Pilinia rimosa, 127, 129–30, 134 Pinnixa fabra, 218 Pinnotheres maculata, 218, 220 ostreum, 218, 221-22 Pirate perch, 231-32 Placobranchus catulus, 310 Plankton, 176, 190, 283, 297 Planorbula sp. 320 Pleonosporium borreri, 128, 131-32, 136 Pleusymtes sp., 291 Pleusymtes sp., 179, 184 Pluchea purpurascens, 152 Plumatella repens, 320 Podon leuckarti, 32-34 polyphemoides, 32-34, 38, 158 Pogonias cromis, 87 Polycerella conyna, 301, 312-13 Polykikos hardmanii, 290-91 Polysiphonia denudata, 128, 131, 133, 136 fibrillosa, 128, 131-32, 136 harveyi, 128, 131–32, 136 nigrescens, 128, 131, 133, 136 subtilissima, 128, 131, 133, 136 Pomatomus saltatrix, 321 Pontoporeia, 186 Porphyra umbilicalis, 128, 131-2, 136 Porphyrosiphon splendidus, 128-9, 133 Portunus sp. 195, 197 Posey, C. R., Sr., and C. J. Moore, 324-5 Pristiphora erichsonii, 149 Prognichthys gibbifrons, 197 Promysis atlantica, 254, 258-9

180-3, 187-8 Prunus sp., 327 Pseudocalanus minutus, 32-3, 37-8 Pseudodiaptomus coronatus, 32-3, 37-8

Prorocentrum triangulatum, 290-1

Protohaustorius deichmannae, 178,

Pteraclis sp., 194, 196-7 Pterotrachea sp., 195, 197 Pumpkinseed, 113 Punctaria plantaginea, 127, 130-1, 135

Pylaiella littoralis, 127, 130–1, 135 Pyrosoma sp., 195

## Q

Q<sub>10</sub>, 15–17, 19–20 Qo<sub>2</sub>, 3, 5–11, 13, 15 Quercus alba, 327 borealis, 327 coccinea, 327 prinus, 327

## R

Rainbow trout, 24 Ralfsia verrucosa, 127, 130-1, 134 Rangia cuneata, 320 Red drum, 87 Reese, J. G., 233–35 Respiration, 3–5, 7, 10, 12–3, 19–20 bivalve, 1 Respiratory rate, 7, 9, 11-2, 14, 16, 18 Retusa canaliculata, 305 Rhithropanopeus harrisi, 320 Rhizoclonium kerneri, 127, 129-30, 134 riparium, 127, 129-30, 134 Rhizostoma octopus, 330 Rhodamine WT dye, 101-2, 105, 107, Rhododendron sp., 327 Rhodophycophyta, key to, 135-6 Rhomboplites aurorubens, 231 Rhyacionia buoliana, 223 Rictaxis punctostriatus, 300-1 Rivkin, S., and J. L. Dupuy, 45-52 Robinia pseudoacacia, 327 Roseyside dace, 63-6 Round herring, 194, 196

## S

Sage, L. E., and S. S. Herman, 29-39 Saggita elegans, 32–3 Saksena, V. P., and E. B. Joseph, 23–8 Salinity, 2, 30–1, 35, 37, 103–4, 124, 176, 185, 187, 202, 204, 206, 210, 283, 285, 289–90 Salt marsh snail, 150, 152 Sant maish stall, 130, 132
Sanderia, 43
Sandier, P. A., 221-2
Sargasso weed, 196
Sargassum hystrix var. buxifolium.
127, 130, 132, 135
natans, 127, 130, 132, 135
Scambus tecumseh, 223-4
Schiebel, and R. C. Wholey. Schubel, and R. C. Whaley, 80 - 6and G. M. Schmidt, and J. R. Schubel, 154–5
Schizothrix calcicola, 126, 128–9, 133
Schmidt, G. M., E. W. Schiemer, and J. R. Schubel, 154–5 Schubel, J. R. 53–8 H. H. Carter, E. W. Schiemer, and R. C. Whaley, 80-6 W. Schiemer, and Schmidt, 154-5 and G. M. Sciaenops ocellata, 87 Scirpus robustus, 151-2 Scotch pine, 149-50, 223-6 Scottolana canadensis, 159 Scytosiphon lomentaria, 127, 130-1, 135 Sea nettle, 43, 300 trout, 97 Selar crumenophthalmus, 196 Selenium, 246 Seliger, H. H., M. E. Loftus, and D. V. Subba Rao, 282–99 Semaeostomes, 314 Seneca, E. D., and S. W. Broome, 212-5

Senecella calanoides, 320 Sewerage effluent, 29 Shellfish growth, 20 Shenk, W. D., 139-44 Short-tailed shrew, 149-50 Shrimp, penaeid, 145 Skeletonema, 36 costatum, 291 Skilletfish, 23, 25-6, 28 Skipjack tuna, 193-9, 237-9, 241-2 age, 237, 240-1 growth, 237, 239 length, 193, 240 -weight relationship, 237-8, 242 sex, 193 stomach contents, 193 weight, 193 Smilax sp., 327 Snake fish, 139 Sodium, 246 Soft-shell clam, 1, 3, 18 larvae, 2 Sorex cinereus, 149 Sorocarpus micromorus, 127, 130-1, 135 Spartina alterniflora, 70, 150-2, 212, 214 cynosuroides, 152 patens, 151-2 Species diversity, 206, 209 Spermothamnion turneri var. varia-bile, 128, 131-2, 136 Sphyraena barracuda, 326 Spirulina subsalsa, 126, 128, 133 Spisula solidisima, 232 Sponge, boring, 232 Sponge, boring, 2: Spot, 87, 89, 97-9 Spotted hake, 59-62 growth, 61 length, 61 Squid, 196 St. Pierre, F 272-81 R. A., and J. Davis, Steam electric station, 1, 20, 111
Stenothoe sp., 179–80
gallensis, 179–82, 185
minuta, 179–83, 189
valida, 179–80
Stephanolepis hispidus, 196
Stiliger fuscatus, 305
vanellus, 305
Striped bass 94, 111, 113 Striped bass, 94, 111, 113 blenny, 23-5, 27-8

mullet, 321

Subba Rao, D. V., M. E. Loftus, and H. H. Seliger, 282-99 Suspended sediment, 53-8, 154 Sylvilagus floridanus, 148 transitionalis, 148 Sympiesis sp., 223-4 Synchaeta sp., 320 Synchelidium sp., 179-81, 183, 187 Systasis diplosidis, 223-6

Tachidius littoralis, 32-3, 38 Talorchestia longicornis, 179, 183 Tamias striatus, 327 Temora longicornis, 32–3, 38 Temprature, 3, 5–9, 11–17, 20, 30, 35, 111, 116, 124, 171, 176, 187, 202, 206, 283, 285, 290 Tendipes telans, 320 Tenellia adspersus, 314 pallida, 301, 314-5 ventilabrum, 314 Tergipes adspersus, 314 Tetrastichus sp., 224 Thalassiosira, 36 Thalassiothrix frauenfeldii, 291 Tinker, B. L., and R. J. Learson, 331-3 Tisbe furcata, 32-3, 38 Tisbe Jurcata, 32–3, 38
Tomopteris sp., 32–3
Tomna sp., 195
Tornatella punctostriata, 300
Tornatina canaliculata, 305
Tortanus discaudatus, 32–3, 38
Transennella tantilla, 14, 17
Transcott pus violecus, 195, 19 Tremoctopus violaceus, 195, 197 Trinectes maculatus, 324-5 Tsuga canadensis, 327 Turbidity, 285

Ulothrix flacca, 127, 129-30, 134 Ulva lactuca var. latissima, 127, 129, 130, 134 var. rigida, 127, 129-30, 134 Unciola irrorata, 177-8, 180, 182-3, 188-9 serrata, 178, 180-3, 188-9 Urophycis regius, 59 Urospora collabens, 127, 129–30, 134 penicilliformis, 127, 129–30, 134

Vaucheria piloboloides, 127, 130-1, 133 Vermillion snapper, 231 Vibilia sp., 195, 197 Virginia pine, 148, 223-6

Ward, F. P., and J. G. Pearson, 323-4 Weakfish, 87-9, 94-9 Whaley, R. C., H. H. Carter, E. W. Schiemer, and J. R. Schubel, 80 - 6Wheeler, R. S., L. M. Lansford, and K. T. Marvin, 327-8 White catfish, 113, 115 perch, 67, 113, 115, 272-4, 279-80 female/male ratio, 275 growth, 276-80 length, 274 length-weight relationships, 275 mortality, 277-80 year class strength, 275 Wilder, C. D., Jr., and R. D. Fisher, 326-7 Williams, A. B., 145-7, 254-62 and K. H. Bynum, 175-92 Williams, R. B., and R. J. Miller, 328-31 and M. B. Murdoch, 69-79 Wilson, W. L., and J. V. Merriner, 62 Winter flounder, 113 Woodland jumping mouse, 150

Xanthophycophyta and Chlorophycophyta, key to, 133-4

Yellow perch, 113 Yotsukura, N., R. L. Cory, and K. Murakami, 101-9

## Z

Zaneveld, J. S., 120-38 Zinc, 246 Zizania aquatica, 151 Zooplankton, 29-31, 33-8, 156, 291, 293, 331 Zoothamnium, 32, 37



# CHESAPEAKE SCIENCE

A REGIONAL JOURNAL OF RESEARCH AND PROGRESS ON NATURAL RESOURCES

Volume XIII, 1972

MARTIN L. WILEY

Managing Editor

Published By

Natural Resources Institute of the University of Maryland Chesapeake Biological Laboratory Solomons, Maryland L. E. Cronin, Director

## Table of Contents

## NUMBER I, MARCH 1972

KENNEDY, V. S., AND J. A. MIHURSKY. Effects of temperature on the respiratory metabolism of three Chesapeake Bay bivalves	I
strumosus)	23
area, N.J	29
(Scyphozoa, Semaeostomeae).  DUPUY, JOHN L., AND SAMUEL RIVKIN. The development of laboratory techniques for the production of cultch-free spat of the oyster, Crassostrea	40
virginica SCHUBEL, J. R. Suspended sediment discharge of the Susquehanna River	45 53
at Conowingo, Maryland, during 1969	33
Short Papers and Notes	
Barans, Charles A. Spotted hake, <i>Urophycis regius</i> , of the York River and lower Chesapeake Bay	59
bite) of Atlantic menhaden, <i>Brevoortia tyrannus</i> , from Virginia  Davis, Robert M. Age, growth, and fecundity of the rosyside dace,	62
Clinostomus funduloides Girard	63
Albumin polymorphism in the white perch, Morone americana	00
NUMBER 2, JUNE 1972	
WILLIAMS, R. B., AND MARIANNE B. MURDOCH. Compartmental analysis of the production of <i>Juncus roemerianus</i> in a North Carolina salt marsh. SCHUBEL, J. R., H. H. CARTER, E. W. SCHIEMER, AND R. C. WHALEY. A case study of littoral drift based on long-term patterns of erosion and	69
deposition	80
JOSEPH, E. B. The status of the Sciaenid stocks of the middle Atlantic coast.	87
YOTSUKURA, N., R. L. CORY, AND K. MURAKAMI. A tracer simulation of waste transport in the Muddy Creek-Rhode River Estuary, Maryland.	101
MOORE, C. J., AND C. M. FRISBIE. A winter sport fishing survey in a warm water discharge of a steam electric station on the Patuxent River, Mary-	101
MARCY, B. C., JR. Spawning of the American shad, Alosa sapidissima, in	110
the lower Connecticut River	116
SHENK, W. D. Terminal innervation pattern in striated muscle of the	
oyster toadfish, Opsanus tau	139

Short Papers and Notes	
WILLIAMS, A. B. A ten-year study of meroplankton in North Carolina	
estuaries: juvenile and adult Ogyrides (Caridea: Ogyrididae)	145
Cottontail (Sylvilagus transitionalis) from Maryland	148
two species of shrews in four Maryland habitat types	149
GRAFFE, A. J. A range extension of the Callionymid fish Callionymus	150
Pauciradiatus (Callionymidae)	153
ment.  DRESSEL, D. M., D. R. HEINLE, AND MARLENE C. GROTE. Vital staining to sort dead and live copepods.	154
	130
Reviews	
<ol> <li>A Primer of Population Biology. (by E. O. Wilson and W. H. Bossert)     Reviewed by Raymond P. Morgan II.</li> <li>Woody Plants of Maryland. (by Russell G. Brown and Melvin L.</li> </ol>	160
Brown) Reviewed by John B. Genys	160
NUMBER 3, SEPTEMBER 1972	
NICHOLSON, W. R. Population structure and movements of Atlantic men-	
haden, Brevoortia tyrannus, as inferred from back-calculated length	
frequencies	161
in North Carolina estuaries: Amphipods BATTS, B. S. Food habits of the skipjack tuna, Katsuwonus pelamis, in	175
North Carolina waters	193
ing Gamma irradiation (Isopoda, Anthuridea)	201
BOESCH, D. F. Species diversity of marine macrobenthos in the Virginia	
area	206
Short Papers and Notes	
SENECA, E. D., AND S. W. BROOME. Seedling response to photoperiod and temperature by smooth cordgrass, <i>Spartina alterniflora</i> , from	
Oregon Inlet, North Carolina.  NICHOLSON, W. R. Fishing pressure and its influence on Monday catches of Atlantic menhaden in the Chesapeake Bay purse seine	212
fishery	215
KRUCZYNSKI, W. L. The effect of the pea crab, <i>Pinnotheres maculatus</i> Say, on growth of the bay scallop, <i>Argopecten irradians concentricus</i>	210
(Say)	218
Say, reared in the laboratory	221
HARMAN, D. M. Parasites of the Nantucket pine tip moth, Rhyacionia	222
frustrana on three pine species in Maryland	223

KEEFE, CAROLYN W., D. H. HAMILTON, AND D. A. FLEMER. Acetone contamination of water samples during quick-freezing	226
MCLEAN, R. I. Chlorine tolerance of the colonial hydroid Bimeria franciscana.	229
BORTONE, S. A. Pugheadedness in the pirate perch, <i>Aphredoderus sayanus</i> (Pisces: Aphredoderidae), with implications on feeding HOESE, H. D. Another boring sponge, <i>Cliona vermifera</i> Hancock, new	231
to the southeastern U.S	232
land	233
NUMBER 4, DECEMBER 1972	
BATTS, B. S. Age and growth of the skipjack tuna, Katsuwonus pelamis	
(Linnaeus), in North Carolina waters	237
lium and lithium in <i>Chlorella vannielii</i> Shihira and Krauss	245
estuaries: mysid shrimps	254
western Atlantic	263
perch, <i>Morone americana</i> , in the James and York rivers, Virginia LOFTUS, M. E., D. V. SUBBA RAO, AND H. H. SELIGER. Growth and dis-	272
sipation of phytoplankton in Chesapeake Bay I. Response to a large	
pulse of rainfall  MARCUS, EVELINE. Notes on some opisthobranch gastropods from the Chesapeake Bay.	300
	300
Short Papers and Notes	
MANGUM, CHARLOTTE P., AND LYNN M. AMENDE. Blood osmotic concentration of blue crabs (Callinectes sapidus Rathbun) found in fresh	
water OVIATT, C. A., A. L. GALL, AND S. W. NIXON. Environmental effects of	318
Atlantic menhaden on surrounding waters	321
calva Linnaeus, in the upper Chesapeake Bay	323
albinism within a reversed American heterostomate	324
HETTLER, W. F., JR. An anomalous Sphyraena barracuda	326
in southwestern Virginia	326
Marvin, K. T., R. S. Wheeler, and L. M. Lansford. A device for releasing feed at scheduled intervals	327
MILLER, R. J., AND R. B. WILLIAMS. Energy requirements and food supplies of ctenophores and jellyfish in the Patuxent River estuary	328
TINKER, B. L., AND R. J. LEARSON. An improved precook process for	
Boon, D. D. The red pigment in discolored oysters and soft-shelled	331
clams from the Chesapeake Bay	334

# Chesapeake Science

Vol. 13

December 1972

Supplement

## CONTENTS

CRONIN, L. EUGENE, WILLIAM J. HARGIS, JR., AND DAVID CHALLINOR.	
Preface.	S1
McErlean, Andrew J., and Catherine Kerby. Biota of the Chesa-	~ ~
AICERDEAN, ANDREW J., AND CATHERINE READ!. Diota of the Chesa	S4
peake Bay: Introduction	DE
McErlean, Andrew J., Catherine Kerby, Richard C. Swartz, and	CO
LAWRENCE C. KOHLENSTEIN. Conclusions and recommendations	S8
SWARTZ, RICHARD C. Biological criteria of environmental change in the	CITE
Chesapeake Bay	S17
McErlean, Andrew J., Catherine Kerby, and Richard C. Swartz.	
Discussion of the status of knowledge concerning sampling variation,	~
physiological tolerances, and possible change criteria for Bay organisms.	S42
McErlean, Andrew J., Catherine Kerby, and Marvin L. Wass.	
Summary of existing conditions of the biota of Chesapeake Bay	S55
McErlean, Andrew J., and Catherine Kerby. Discussion of taxa	
and special effects summaries	S64
take of the control o	
Taxa and Special Effects Summaries	
raxa and Special Elects Summaries	
Colwell, Rita R. Bacteria, yeasts, viruses, and related microor-	
ganisms of the Chesapeake Bay	S67
Shearer, C. A. Fungi of the Chesapeake Bay	S71
VAN VALKENBURG, SHIRLEY. Nannoplankton of the Chesapeake Bay.	S72
Mulford, Richard A. Phytoplankton of the Chesapeake Bay	S74
Krauss, Robert W., and Patricia Orris. Benthic macroalgae of	
the Maryland portion of the Chesapeake Bay	S81
Ott, Franklyn D. Macroalgae of the Chesapeake Bay	S83
OWENS, ANNA BELLE. Bryophytes and lichens of the Chesapeake Bay.	S85
CORBETT, M. KENNETH. Viruses of aquatic plants	S86
Anderson, Richard R. Submerged vascular plants of the Chesa-	200
ANDERSON, RICHARD R. Submerged vascular plants of the Olesa-	S87
peake Bay and tributaries	DOI
HIGMAN, DANIEL. Emergent vascular Flams of Chesapeake Day wee	S89
Brown, Russell G., and James L. Reveal. Vascular plants of the	000
	S94
Chesapeake Bay	DOI
SMALL, EUGENE B. Free-living protozoa of the Chesapeake Bay ex-	S96
clusive of Foraminifera and the flagellates	S97
Buzas, Martin A. Foraminifera of the Chesapeake Bay	
Bishop, John W. Ctenophores of the Chesapeake Bay	S98
CALDER, DALE R. Cnidaria of the Chesapeake Bay	S100
Higgins, Robert P. Priapulida of the Chesapeake Bay	S102
Higgins, Robert P. Tardigrada of the Chesapeake Bay	S103
Higgins, Robert P. Kinorhyncha of the Chesapeake Bay	S105
OVERSTREET ROPIN M. Digenetic tremstodes of the Chesaneake Bay	8106

Heinle, Donald A. Free-Living Copepoda of the Chesapeake Bay. Williams, Austin B. Decapod crustaceans of the Chesapeake Bay. Musick, John, and Martin L. Wiley. Fishes of the Chesapeake Bay.	S121 S123
peake Bay	S137
Flemer, David A. Current status of knowledge concerning the cause and biological effects of eutrophication in Chesapeake Bay	S144
Frazier, John M. Current status of knowledge of the biological	DITT
effects of heavy metals in Chesapeake Bay	S149
Munson, Thomas O., and Robert J. Huggett. Current status of research on the biological effects of pesticides in Chesapeake Bay.	S154
Systems for Analysis of Biological Data	
Kohlenstein, Lawrence C. Systems for storage, retrieval, and analysis of data	S157
Sample Inventories of Bay Organisms	
Shearer, C. A. Tentative outline for inventory of Division Mycota:  Corollospora pulchella (fungus)	S171
merged aquatic vascular plants: Ruppia marilima L. (ditch	
grass). Southwick, C. H. Tentative outline for inventory of aquatic vege-	S172
tation: Myriophylum spicatum (Eurasian Watermilfoil)	S174
Heinle, Donald R. Tentative outline for inventory of zooplankton organisms: Acartia tonsa (copepod)	S176
Calder, Dale R. Tentative outline for inventory of planktonic	
Cnidaria: Chrysaora quinquecirrha (stinging nettle)	S179
PFITZENMEYER, H. T. Tentative outline for inventory of molluses:  Mya arenaria (softshell clam)	S182
	S184
HARDY, JERRY D., JR. Tentative outline for inventory of amphibians: <i>Hyla cinerea</i> (green tree frog)	0100
	3130
SWARTZ, RICHARD C. A preliminary design of an information storage	S180 S191

